Syllabus for EENG 2710 Section 001

University of North Texas, College of Engineering
Department of Electrical Engineering
EE2710: Digital Logic Design
Section 1: 3 Credit Hours Fall 2023

General course information. Instructor name, contact information as well as TA name and contact information are shown. Class meeting times are presented.

Instructor:	**Dr. Edgard Muñoz-Coreas**
Office Hours:	Monday-Wednesday 4:30-5:30 NTDP B230 or by appointment
Contact:	Edgard.Munoz-coreas@unt.edu
Lecture:	Monday-Wednesday 2:30-3:50pm NTDP E264
Teaching Assistant:	Mitul Mahendrabhai Parmar
TA Office Hours	Wednesday 12:00PM to 2:00PM
TA Office	B-250
TA Contact	MitulMahendrabhaiParmar@my.unt.edu

- In the event the Instructors take ill or unforseen circumstances (such as COVID pandemics) course delivery may be temporarily modified as outlined in the Zoom Section of this syllabus

** If the instructor arrives late to office hours they may be extended at the discretion of the instructor.

Description:

The purpose of this course is to introduce you to digital computers and information processing systems. This course covers boolean algebra, principles and methodology of logic design, combinatorial circuit design, state elements and sequential logic circuits.

Prerequisite(s)

Engineering or engineering technology majors.

Corequisite(s)

EENG 2711 (which must be completed with a grade of C or better) for Biomedical Engineering (Bioinstrumentation track), Computer Engineering, and Electrical Engineering majors.

Textbook (required)

Fundamentals of Logic Design, 7th Enh. Ed., C. H. Roth Jr., L. L. Kinney, and E. B. John, Cengage Learning, Inc., 2021. ISBN: 978-1-337-62035-2. https://www.cengage.com/c/fundamentals-of-logic-design-enhanced-edition-7e-roth-jr/9781337620352/

Additional material, as required, shall be provided on Canvas.

Course Topics

- Number Systems and Digital Logic Gates
- Boolean Algebra, Switching Functions and Canonical Forms
- Combinational Circuit Minimization, Analysis, and Synthesis
- Sequential circuits elements and sequential logic circuits
- Modular Sequential Logic, Counters and shift registers
- Analysis and Design of synchronous sequential circuits

Learning Objectives:

The objective of this course is that, by course's end, the student should be able to:

1. Identify a digital systems and understand its advantages. Differentiate a digital system from an analog one. [OBJ:1]
2. Know non-decimal radix number systems, radix arithmetic and Boolean algebraic principles. [OBJ:2]
3. Utilize Boolean algebra to the design and simplification of digital logic. [OBJ:3]
4. Analyze and synthesize combinatorial logic systems [OBJ:4]
5. Analyze and synthesize sequential logic systems [OBJ:5]
6. Given problem requirements, identify and design a complete digital system from basic building blocks. [OBJ:6]

Course Learning Outcomes

The Learning Outcomes for this course are as follows. The corresponding Units where the outcomes are addressed are indicated in Italics:

1. Digital and Analog Systems: Basic Concepts *[Unit:1]*
2. Number Systems and Digital Logic Gates *[Unit:1 and Unit:2]*
3. Boolean Algebra, Switching Functions and Canonical Forms *[Unit:2 through Unit:4]*
4. Combinational Circuit Minimization, Analysis, and Synthesis *[Unit:4 through Unit:9]*
5. Sequential circuit elements and sequential logic circuits *[Unit:11]*
6. Modular Sequential Logic, Counters and shift registers *[Unit:12]*
7. Analysis and Design of synchronous sequential circuits *[Unit:11 through Unit:15]*

The learning objectives and course outcomes correspond to ABET Criterion 3. Student Outcomes items 1 and 7 which are as follows:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Canvas

Course interaction shall be through Canvas. Course materials shall be provided through canvas. Modules containing reference materials and worked problems shall be presented through Canvas weekly. All homework assignments and quizzes shall be administered through Canvas. *It is expected that students shall study the module content*. In the event of a suspected misprint or error please notify the instructors right away so it can be examined and, where applicable, corrected.

Students should immediately report any technical problems to the UNT University Information Technology Student Help Desk (helpdesk@unt.edu or 940.565.2324) as well as the instructor. The instructor and the UNT University Information Technology Student Help Desk Team will work with the student to resolve any issues at the earliest possible time.

Grading

The Grading scale for this course is as follows:

Grade scale for the course.

F	D	C	B	A
≤ 59.99%	60.00% - 69.99%	70.00% - 79.99%	80.00% - 89.99%	90.00% ≤

The grading breakdown for this course is as follows:

Breakdown of course grade for this course

Breakdown of Grading		
Midterms (2):		46% (23% apiece)
Final:		24%
Homework:		20%
Quiz:		10%

Grading procedure for the course is outlined as followed:

- Homework shall be graded using the scale shown in the Table . No curving shall be applied.
- Quizzes shall be graded using the scale shown on the Table. No curving shall be applied.
- Examinations shall be graded using the scale shown in the Table. *Students whose test scores are each a C or higher should receive a passing grade for the examination component of the final grade at the end of computation. The calculation of the final grade is presented shortly.*
- *Extra credit opportunities for this course are as follows. No additional opportunities for extra credit will be offered.*
    - Students with no more than two unexcused absences from lecture shall receive 1% extra credit on their final grade. Duration of attendance and number of missed lectures shall be used in determining if a student qualifies for extra credit. Attendance shall be collected in-class.

Calculation of Final Grade

The following outlines the procedure to produce the final grades in this course. *Students should use the following procedure to track their progress.*

Any and all curving shall be applied to the final raw scores for the course where applicable. The final score shall be calculated as follows:

$$Grade = Midterm_1 \cdot 0.23 + Midterm_2 \cdot 0.23 + Final \cdot 0.24 + Homework \cdot 0.2 + Quizzes \cdot 0.1 + Attendance \cdot 0.01$$

Curving shall be applied to each midterm and final examination as follows. For each examination, the calculated mean shall correspond to a curved score of 70%. The absolute value of difference between $70\%$and the computed mean shall determine how much the raw scores shall be elevated. So, given a test score of 58%, should the average be a 65%, the final adjusted result shall be a 63% which is a D.

So students can estimate their final grades, *the average for each examination shall be reported when grades are returned.*

In summary: *Students who (i) have examination scores at or above the reported means and (ii) achieve high marks on homework, quizzes and attendance should receive a passing grade (i.e. C or better) for the course at the end of computation.*

Course Policies

- Any and all ADA accommodations shall supersede these policies where applicable.

Homework

Unless stated otherwise in writing, homework shall be graded no later than one week after the due date. Unless stated otherwise in writing, worked solution sets shall be made available for review no later than one week after the due date and no sooner than three days after the due date. After an assignment is returned, you have up to two weeks to contest any grade issues.

Homework shall be submitted through Canvas. Students are expected to use good time management. *Homework submitted one day late will be penalized* 50%. *Homework submitted two or more days late will receive a zero.* Excuses for homework shall be permitted only for excused absences outlined in UNT policy 06-039 Links to an external site.. Students who need to request an excused absence should contact the instructors promptly.

Quizzes

Unless stated otherwise in writing, quizzes shall be graded no later than one week after the due date. Unless stated otherwise in writing, worked solution sets shall be made available for review no later than one week after the due date and no sooner than three days after the due date. After a quiz is returned, you have up to two weeks to contest any grade issues.

Quizzes shall be posted on Canvas. Worked solutions shall be submitted through Canvas. Students are expected to use good time management. Quizzes *submitted one day late will be penalized* 50%. Quizzes *submitted two or more days late will receive a zero.* Excuses for quizzes shall be permitted only for excused absences outlined in UNT policy 06-039 Links to an external site.. Students who need to request an excused absence should contact the instructors promptly.

Quizzes shall be open-book, open-notes, open-reference and students may consult each other and/or the instructors for assistance. Each student is required to issue their own submission. All students are expected to individually work the quiz problems.

Communication

All email communications to the Instructors (TA and Professor) should include the course name and section number in the subject line. This guarantees your messages shall not be dismissed as spam. *The instructors shall only respond to messages from UNT email accounts or from UNT canvas email.*

Midterm and Final Examinations

Midterm examinations shall take place during regular class time. Students shall have the whole class period (1 hour and 20 minutes for midterms, 2 hours for final) to complete the examination. *Examinations shall be closed-book, closed-class-notes and all computers shall be off.* Students shall be able to make use of both sides of a 8.5 x 11 sheet for notes. This information shall be included in the instructions for each examination.

Examination grades shall be returned as soon as possible after the completion of the test. A worked solution to a version of the examination shall be provided no earlier than two days after all students have taken the examination. There shall be a examination review for each test. The review shall take place before the examination during either (i) regular class time and/or (ii) the regularly scheduled office hours. After an examination is returned, you have up to two weeks contest any grade issues.

Excuses for examinations shall be permitted only for excused absences outlined in UNT policy 06.039 Links to an external site.. The instructors should be contacted promptly in the event a student need to request an excused absence.

Lecture and Attendance Policy

All students are strongly encouraged to attend lecture. Students are expected to have reviewed the textbook readings and module examples outside of class. The reading schedule is posted on the course schedule.

New modules content will be released weekly. I*n the event the new module is not available for viewing, please notify the instructors.*

In lecture I shall assume students have examined and are familiar with the content in the course modules. Where appropriate, the instructors may recommend students have specific course pages for reference. Emphasis will be placed on applying course principals to design problems and analysis problems you will encounter in this course. In-class questions are highly encouraged. At the instructor's discretion, questions posed during class may be deferred to the end of class or to Office Hours. Notes from each lecture will be made available on canvas no later then one week after each lecture.

Students with no more than two unexcused absences from lecture shall receive 1% extra credit on their final grade. All excused absences are outlined in UNT policy 06-039 Links to an external site.. Attendance shall be collected in-class. *Please return the attendance sheet to the instructors by the end of class.* If (i) an attendance sheet was issued at the beginning of class and (ii) the filled out attendance sheet is not returned to the instructors by the end of the class, the instructors, at their discretion, may deduct a permitted unexcused absence from each member of the class. If the instructors do not produce an attendance sheet before the end of a given lecture, then all students shall be considered present for that day. *It is the responsibility of the student to confirm that the attendance sheet has been signed.*

The instructors along with potentially several of your classmates have allergies and/or sensitivities to fumes and fragrances. Therefore, as a courtesy students are requested to refrain from wearing scented products such as perfume/colognes, hair products, cosmetics, or scented lotions while attending class. The instructors reserve the right to ask a student who uses such products to move to the rear of the classroom should the scent(s) trigger irritation. To avoid fragrance sensitivity reactions, the instructors may use measures such as leaving classroom doors open or running fans.

Course Evaluation

Student Perceptions of Teaching (SPOT) is the student evaluation system for UNT and allows students the ability to confidentially provide constructive feedback to their instructor and department to improve the quality of student experiences in the course.

Students will receive an email from “UNT SPOT Course Evaluations via IASystem Notification” (no-reply@iasystem.org) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the SPOT website (http://spot.unt.edu/) or email spot@unt.edu.

Academic Integrity Standards and Consequences

According to UNT Policy 06-003 Links to an external site., Student Academic Integrity: academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University. *Pursuant UNT policy 06-003, Students found guilty of academic dishonesty shall receive a **F for the course** and may be subject to additional discipline.*

ADA Accommodation Statement

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. *You may request reasonable accommodations at any time*; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by

appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access Links to an external site. website. You may also contact ODA by phone at (940) 565-4323.

Acceptable Student Behavior

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn shall not be tolerated. Students engaging in unacceptable behavior will be directed to leave the classroom. The instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct Links to an external site.. The UNT's Code of Student Conduct can also be seen at (https://deanofstudents.unt.edu/conduct).

Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

Sexual Assault Prevention

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT's Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim's compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates Links to an external site. can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565- 2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

Employees who, in the course and scope of their authorized duties, witness or receive information regarding the occurrence of an incident that the employee reasonably believes constitutes sexual misconduct and is alleged to have been committed by or against a person who was a student enrolled at or an employee of the institution at the time of the incident shall promptly report the incident to the Title IX Coordinator in the Office of Equal Opportunity or a deputy Title IX Coordinator. The report must include all information concerning the incident known to the reporting person that is relevant to the investigation and, if applicable, redress of the incident, including whether an alleged victim has expressed a desire for confidentiality in reporting the incident. For additional details please see UNT policy 16.005 Links to an external site.

Class Recordings & Student Likenesses

Class recordings are the intellectual property of the university or instructor and are reserved for use only by students in this class and only for educational purposes. Students may not post or otherwise share the recordings outside the class, or outside the Canvas Learning Management System, in any form. Failing to follow this restriction is a violation of the UNT Code of Student Conduct and could lead to disciplinary action.

Syllabus Change Policy

The instructor(s) reserve the right to update or revise the syllabus content. You shall be informed of any and all changes via (i) announcement, (ii) class-wide email. The purpose of any revision shall be outlined. The revised syllabus shall supersede any previous versions and take immediate effect. Any and all ADA

accommodations shall supersede revised syllabus policies where applicable.

Course Schedule Change Policy

Circumstances such as campus closure will require that the course schedule be updated or revised. Therefore, the instructor(s) reserve the right to update or revise the course schedule which may include adjusting assignment due dates. You shall be informed of any and all changes via (i) announcement, (ii) class-wide email. The purpose for any revision shall be outlined. The revised course schedule shall supersede any previous versions and take immediate effect.

Zoom Policies

Appointments to see the instructors can be handled remotely. For these appointments, the Canvas Zoom module shall be used. In the event class is to be delivered in remote format, the Canvas Zoom module shall be used as well. Canvas shall be used for all submissions and course interactions. The following outlines Zoom policy for this course:

All students are asked to please make sure their Zoom ID includes their first and last names. Zoom IDs that use nicknames, aliases, device names, etc. shall be assumed to not be an enrolled student in the course and not allowed into the lecture meeting. Usage of any recorded remote lectures will be governed by the recording policy in this syllabus and all relevant UNT policy

For the inevitable technical issue, students should immediately notify UNT University Information Technology Student Help Desk (helpdesk@unt.edu or 940.565.2324) as well as the instructor. The instructor and the UNT University Information Technology Student Help Desk Team will work with the student to resolve any issues at the earliest possible time.